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PRE-APPEAL BRIEF REQUEST FOR REVIEWDocket Number (Optional)
12480-000162/US

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Application Number
10/569,548Filed
February 27, 2006First Named Inventor
Kenzo MAHASHI, et al.Art Unit
1795Examiner
Edna WONG

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor

☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

☒ attorney or agent of record.
Registration number 34,313.

☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34 _____

Signature

Donald J. Daley

Typed or printed name

703.668.8000

Telephone number

April 9, 2010

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Kenzo MAHASHI, et al. Conf. No.: 7724
Application No.: 10/569,548 Examiner: Edna WONG
Filing Date: February 27, 2006 Art Unit: 1795
Title: METHOD FOR CONTROLLING STRUCTURE OF NANO-SCALE
SUBSTANCE, AND METHOD FOR PREPARING LOW
DIMENSIONAL QUANTUM STRUCTURE HAVING NANO-SCALE
USING THE METHOD FOR CONTROLLING STRUCTURE
Atty. Dkt. No.: 12480-000162/US

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April 9, 2010

REASONS IN SUPPORT OF PRE-APPEAL BRIEF REQUEST FOR REVIEW

In response to the Final Office Action mailed December 10, 2009 and the Advisory Action mailed March 23, 2010, the following remarks are respectfully submitted in support of the Pre-Appeal Brief Request for Review in connection with the above-identified application. The Pre-Appeal Brief Request for Review is being concurrently submitted with a Notice of Appeal.

Claims 1-18 are currently pending in the present application, with claims 1 and 7-8 being written in independent form. Applicants respectfully request the designated panel of examiners (Panel) to review the rejection of claims 1-6 and 9-18 under 35 U.S.C. § 103(a) as being unpatentable over "*Diameter-Selective Removal of Single-Wall Carbon Nanotubes Through Light-Assisted Oxidation*," Chemical Physics Letters (June 4, 2003), Vol. 374, Issues 1-2, pp. 132-136 (Yudasaka) in view of "*Laser-Induced Effects in Raman Spectra of Single-Wall Carbon Nanotubes*," Quantum Electronics (July

31, 2003), Vol. 33, No. 7, pp. 645-650 (Bokova), "*Theoretical Study of Structure and Raman Spectra for Models of Carbon Nanotubes in Their Pristine and Oxidized Forms*," J. Phys. Chem. A (2002), Vol. 106, pp. 11973-11980 (Irle), and US 7,396,520 (Howard).

Claim Rejections under 35 U.S.C. § 103 (Yudasaka + Bokova + Irle + Howard)

Claims 1-6 and 9-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yudasaka in view of Bokova, Irle, and Howard. Applicants respectfully traverse this rejection for the reasons below.

A claimed invention will not be deemed obvious when one or more prior art references "*teach away*" from the claimed invention.¹ "A reference may be said to *teach away* [from an asserted path] when a person of ordinary skill, upon reading the reference, would be *discouraged* from following the [asserted] path."² An asserted modification also cannot render the prior art *unsatisfactory* for its intended purpose.³ If the asserted modification would render the prior art invention being modified *unsatisfactory* for its intended purpose, then there is no suggestion or motivation to make the proposed modification.⁴

Without conceding as to any of the Examiner's assertions that are not specifically addressed herein, Applicants note that the combination of Yudasaka,

¹ E.g., *Gillette Co. v. S.C. Johnson & Sons, Inc.*, 919 F.2d 720, 724, 16 USPQ2d 1923, 1927 (Fed. Cir. 1990); *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 83 USPQ2d 1169 (Fed. Cir. 2007).

² *In re ICON Health & Fitness*, 496 F.3d 1374, 2007 U.S. App. LEXIS 18244 (Fed. Cir. 2007) (quoting *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) and referencing *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007)).

³ MPEP 2143.01.

⁴ *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Bokova, Irle, and Howard fails, as a preliminary matter, to disclose or suggest a method of structure control involving “irradiating the mixture of nano-scale low-dimensional quantum structures of differing densities of states with an electromagnetic wave in air **for two hours**,” as recited by claim 1.

The Examiner acknowledges that “Yudasaka does not disclose” a method wherein the mixture of nano-scale low-dimensional quantum structures is irradiated “for two hours,” but nevertheless asserts that this step would have been obvious to one ordinarily skilled in the art based on the teachings of Yudasaka.⁵ In sum, the Examiner asserts that, because Yudasaka does not set a time limit, irradiation for two hours would have been obvious so as to remove more nanotubes.⁶ The Examiner’s reasoning is completely erroneous.

It is important to note that Yudasaka does not merely pertain to the general removal of nanotubes. Rather, Yudasaka relates to the “diameter-selective removal” of nanotubes.⁷ As previously noted in our response of March 9, 2010, Yudasaka explicitly teaches that when the irradiation lasted longer than 5 minutes, “diameter-selective removal through light irradiation was not apparent.”⁸ Stated more clearly, Yudasaka teaches that the removal of the nanotubes was no longer diameter-selective after 5 minutes of irradiation, even though the irradiation continued to break down and remove nanotubes in general.⁹ This is evidenced by FIG. 1 and the corresponding text in Yudasaka. As explained by Yudasaka, only about 50 wt% of the nanotubes

⁵ *Final Office Action* (12/10/2009): p. 7, ln. 5-6; p. 11, section g.

⁶ *Advisory Action* (03/23/2010): p. 6, ln. 3-19.

⁷ *E.g.*, Yudasaka: Title; p. 135, section 4 (Discussion).

⁸ Yudasaka: p. 135, right col., last par.

⁹ *Id.*

remained after 5 minutes of diameter-selective removal with the irradiation.¹⁰ However, FIG. 1(g) clearly shows that the black color (caused by the presence of the nanotubes) *significantly faded after 30 minutes of irradiation* due to the significant break down and removal of the nanotubes in general.

As emphasized above, Yudasaka relates to the “diameter-selective removal” of nanotubes (not the general removal of nanotubes).¹¹ Thus, there is no credible reason why one ordinarily skilled in the art would have been motivated to just modify the method of Yudasaka so as to irradiate the nanotubes for two hours, especially when Yudasaka explicitly teaches that the desired “diameter-selective removal” is no longer apparent after 5 minutes. Furthermore, irradiation for two hours (which is 24 times longer than the 5 minute period of Yudasaka) would essentially break down and remove all the nanotubes¹², which would basically eviscerate the goal of Yudasaka for the diameter-selective removal of nanotubes. Thus, it is clear that Yudasaka *not only teaches away* from Applicants’ claimed irradiation period, *but* one ordinarily skilled in the art would have *also* been discouraged from engaging in the Examiner’s asserted modification. Furthermore, the Examiner’s asserted modification to arbitrarily extend the irradiation time would actually render the method of Yudasaka unsatisfactory for its intended purpose. The additional teachings of Bokova, Irle, and Howard fail to remedy the deficiencies of Yudasaka.

For at least the reasons above, a *prima facie* case of obviousness cannot be established with regard to claim 1. Consequently, a *prima facie* case of obviousness also cannot be established with regard to claims 2-6 and 9-18, at least by virtue of

¹⁰ Yudasaka: FIG. 1(e); p. 133, right col.

¹¹ E.g., Yudasaka: Title; p. 135, section 4 (Discussion).

their dependency from claim 1. Accordingly, Applicants respectfully request the Panel to withdraw the above rejection.

Conclusion

In view of the above, Applicants respectfully request the Panel to withdraw the Examiner's rejections and allow the pending claims.


Should there be any matters that need to be resolved in the present application, the Panel is respectfully requested to contact Alex C. Chang, Reg. No. 52,716, at the telephone number below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

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¹² E.g., *Yudasaka*: FIG. 1.